AD-A037 677 NATIONAL MILITARY COMMAND SYSTEM SUPPORT CENTER WASH--ETC F/G 15/6
THE NMCSSC QUICK-REACTING GENERAL WAR GAMING SYSTEM (QUICK). US--ETC(U)
JAN 77

UNCLASSIFIED NMCSSC-CSM-UM-9-74-VOL-4- NL

1 OF 1
ADA037 677

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**DEFENSE COMMUNICATIONS AGENCY**

COMMAND AND CONTROL
TECHNICAL CENTER

**WASHINGTON, D. C. 20301**

The NMCSSC Quick-Reacting General War Gaming System (QUICK). Users Manual. [redacted] Volume IV. Sortie Generation Subsystem. Change 2.

IN REPLY
REFER TO: C314

3 Jan[redacted] 1977

NMCSSC-CSM-UM-9-74-Vol-4-2

TO: RECIPIENTS

SUBJECT: Change 2 to Users Manual CSM UM 9-74, Volume IV, Sortie Generation Subsystem

1. Insert the enclosed change pages and destroy the replaced pages according to applicable security regulations.

2. A list of Effective Pages to verify the accuracy of this manual is enclosed. This list should be inserted before the title page.

3. When this change has been posted, make an entry in the Record of Changes.

FOR THE DIRECTOR

52 Enclosures
Change 2 pages

J. DOUGLAS POTTER
Assistant to the Director
for Administration

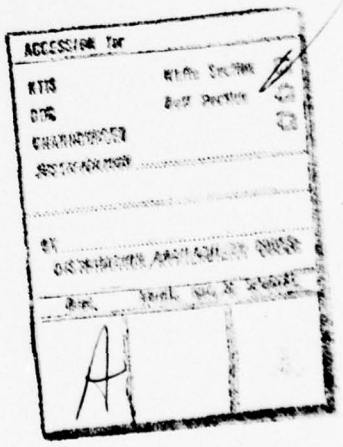


243 000

EFFECTIVE PAGES - JUNE 1976

This list is used to verify the accuracy of CSM UM 9-74 Volume IV after change 2 pages have been inserted. Original pages are indicated by the letter 0, change 1 pages by the numeral 1, etc.

| Page No. | Change No. | Page No. | Change No. |
|---|---|---|---|
| Title Page | 0 | 212.1-212.2 | 2 |
| ii | 2 | 213-235 | 0 |
| iii | 0 | 236 | 1 |
| iv | 2 | 237-238 | 0 |
| v-vii | 0 | 239 | 1 |
| viii | 2 | 240-242 | 0 |
| ix | 0 | | |
| x-xi | 2 | | |
| xii-xiv | 0 | | |
| 1-9 | 0 | | |
| 10 | 2 | | |
| 11-20 | 0 | | |
| 21-30 | 2 | | |
| 30.1-30.4 | 2 | | |
| 31 | 2 | | |
| 32-51 | 0 | | |
| 52 | 2 | | |
| 52.1-52.2 | 2 | | |
| 53-120 | 0 | | |
| 121 | 1 | | |
| 122-126 | 0 | | |
| 127 | 1 | | |
| 128-129 | 0 | | |
| 130 | 1 | | |
| 131-145 | 0 | | |
| 146 | 2 | | |
| 147-149 | 0 | | |
| 149.1-149.2 | 2 | | |
| 150-190 | 0 | | |
| 191-195 | 2 | | |
| 196-198 | 0 | | |
| 199-203 | 2 | | |
| 204-207 | 1 | | |
| 207.1-207.2 | 2 | | |
| 208 | 1 | | |
| 209 | 0 | | |
| 210-212 | 1 | | |



## ACKNOWLEDGMENT

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ILLUSTRATIONS

2.3.2. Output Files. The Allocation-by-Group File (ALOCGRP), to be used by program POSTALOC, is identical to the TMPALOC file for those weapon groups without a MIRV capability. For MIRV groups, the data have been ordered and flagged to specify the assignment of weapons on each booster.

2.3.3 Scratch Files. The ISCR (Base Target Data) contains the basic target data read from the ALOCGRP file. It is placed on the ISCR file so that the core storage reserved for this information may be used for other purposes. A temporary assignment plan is also saved on this file.

The ITABL (User-Input Parameters) file is used for temporary storage of the user-input parameters which define the footprint constrainst equations.

2.3.4 Filehandler Buffer Utilization. The filehandler buffer areas utilized by program FOOTPRNT are shown in figure 5.

| FILE NAME | BUFFER NUMBER (LUN) |
|---|---|
| BASFILE | 8 |
| TMPALOC | 3 |
| ALOCGRP | 2 |
| ISCR | 25 (Scratch) |
| ITABL | 26 (Scratch) |

Figure 5. Filehandler Buffer Utilization-Program FOOTPRNT

2.4 Input. There are two types of user input. One type, program control information, is used in the assignment module of program FOOTPRNT to govern the heuristic footprinting algorithm. The second type, footprint constraint information, is used in the footprint testing module of the program to determine the feasibility of candidate booster assignments.

The program control information is input in free field format as described in appendix D of Users Manual Volume I. The end of these parameters is signalled by a blank card or a terminating parameter field (@). The footprint constraint information is input in the format described later.

2.4.1 Options. Except for program control parameters, described below, the only user option concerns the method used to determine the feasible loading for a booster. This selection is made by use of the user-input parameter LOADOPT discussed in the next section. There are three possible booster loading options as follows.

The Free Loading option uses only a maximum load constraint to determine the number of reentry vehicles in each booster assignment. Any number of RVs from zero to the maximum load (MAXLOAD) may be placed on any booster.

The ADDON (Minimum Desired Loading) option uses the rigid maximum load constraint but also attempts to meet a minimum load constraint. The assignment process proceeds as in the free loading option. If the minimum load constraint is not met, reentry vehicles are added to the assignment until the constraint is met or until the addition of a reentry vehicle is infeasible because of fuel constraints. In the latter case, the assignment is output with the maximum feasible number of reentry vehicles.

The MNLREQ (Minimum Required Loading) option considers rigid maximum load constraints. The program will make target assignments if, and only if, the minimum load constraint has been met. No booster assignment will contain less than the minimum load, unless it is impossible to find a feasible footprint with that load. In that case, no assignment is made. If the minimum load specified exceeds the average of reentry vehicles per booster, some boosters will have no targets to consider for assignment and/or some boosters will not be assigned. In either case, a warning message is issued to the user.

2.4.2 User-Input Parameters: Program Control Information. These parameters as described below are all input in free field format.

2.4.2.1 LOADOPT: Selects the booster loading options as described in the previous section. A value of *FREE* selects the free loading option; a value of *ADDON* selects the ADDON option; a value of *MNLREQ* selects the minimum required option. Figure 6 displays a card selecting the ADDON option.

| | |
|---|---|
| NAME: | LOADOPT |
| RANGE: | *FREE*, *ADDON*, *MNLREQ* |
| DEFAULT: | *FREE* |

There are four types of systems modeled in program FOOTPRNT. The first (MTYPE=1) is a long-range system where launch azimuth is an important parameter. The second (MTYPE=2) is a shorter range system. The third (MTYPE=3) is a long-range system similar to the first type except modified to carry a full load of area defense pentration aids. The fourth (MTYPE=4) is a long-range system with a different set of functions and parameters than the first system.

Each MIRV system is identified for program FOOTPRNT by the value of the attribute IMIRV. Each system is identified on input by a system title card requesting the appropriate set of footprint constraint formulae. The reading of the footprint parameter table data is terminated by a system title card with a zero or negative value for IMIRV. The systems can be input in any order. (Figure 7 displays the format for a system title card.)

If more than one IMIRV value refers to a specific formula for footprint test (see below), then the data for that formula must immediately follow the first occurrence of a system title card requesting the use of that formula. Succeeding title cards with the same formula definition need no data following them.

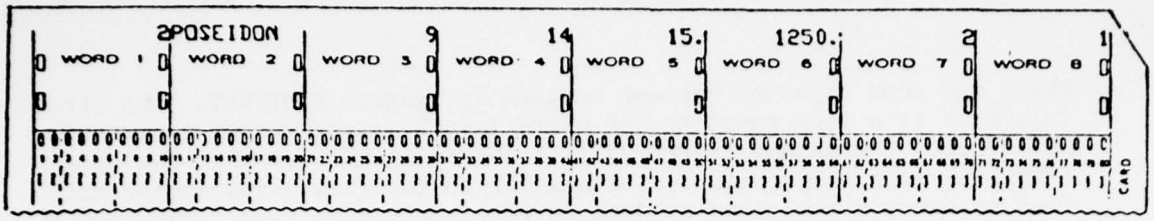
IMIRV is a PAYLOAD attribute only. It may appear with the weapon system but is ignored. The value of the attribute PAYLOAD determines whether or not a missile system is a MIRV.

Different MIRV types (that is, with a different Hollerith name, TYPE) should have different IMIRV numbers, and therefore, different payload numbers, even though the weapons have the same characteristics. This is to permit the weapons to be referenced separately (separate title cards). There cannot be two title cards in FOOTPRNT with the same value of IMIRV.

However, this consumes several payload numbers. If the user wishes to avoid this, he may assign the same IMIRV and payload to several different types of missiles. For example, assume that Polaris and Poseidon both carried the same payload. They could both be assigned IMIRV=1 and referred to as "Polaris" in FOOTPRNT. FOOTPRNT would process the Poseidons as well. This avoids carrying two duplicate payloads in the Payload Table.

In any run of FOOTPRNT, up to 40 different kinds of MIRV systems may be played. Since only one side can be processed at a time, the maximum number of MIRV systems available per side is 40.

The systems may be divided among the functional types (MTYPE=1, 2, 3, or 4) in any manner the user desires.




| WORD | FORMAT | (J) | RANGE | DESCRIPTION |
|---|---|---|---|---|
| 1 | Integer | N/A | 1-40 | IMIRV value assigned in data base |
| 2 | A8 | L | Standard | Hollerith name of system |
| 3 | Integer | N/A | 1-16 | Minimum number of RVs permitted on each booster* |
| 4 | Integer | N/A | 1-16 | Maximum number of RVs permitted on each booster (should be greater than or equal to minimum number of RVs) |
| 5 | Floating | N/A | ≥0.0 | Minimum spacing in nautical miles required between consecutive desired ground zeros (DGZs) in a footprint |
| 6 | Floating | N/A | ≥0.0 | The maximum distance in nautical miles that the system can send one RV after the first target under optimal conditions |
| 7 | Integer | N/A | 1,2,3,4 | MTYPE: indexes the functional form of the formula |
| 8 | Integer | N/A | ≥1 | IDATA: indexes the data set of the formula |

* If the free loading booster option is not selected, this value must be less than or equal to the lowest average number of RVs per booster associated with any missile group with this value of IMIRV as indicated by program PLANSET.

Figure 7. MIRV System Title Card Format

A formula for footprint testing is defined by two variables input on the system title card. The first, MTYPE, references the functional form of the formula to be used. If MTYPE=1, the corresponding functions of the long-range system are used. MTYPE=2 requests the short-range functions. If MTYPE=3, the long-range system functions are used as modified by the addition of a full load of area defense penetration aids. If MTYPE=4, a fourth set of functions are used. Within each type, there are data sets for the parameters used in the function. Thus, formula definition requires MTYPE, the functional form indicator, and IDATA, the index to the parameter set. For example, if two long-range systems are desired, there would be two formula definitions: MTYPE=1, IDATA=1; MTYPE=1, IDATA=2. The program will retrieve the correct data set at the initiation of processing for each MIRV group. The values of IDATA for any functional form (i.e., same value of MTYPE) need not be consecutive. For example, the two formula definitions described previously in this paragraph could be defined as: MTYPE=1, IDATA=7; MTYPE=1, IDATA=3. There may be any number of formula definitions (values of IDATA) for each functional form (value of MTYPE).

The format of the user-input parameters for the footprint parameter tables are explained in the following sections. Unless otherwise noted, the default value for each parameter is 0.0; justification within the data field is not applicable, and the decimal point should always be input in each field.

2.4.3.1 Long Range System: MTYPE=1: This system can have a configuration of one to 16 RVs. Figure 8 displays the input format of the necessary data. All formats are F10.0, with one value per field and eight values per card. Each field is 10 columns wide starting with column 1. Successive values are ordered by ascending order of RVs. Thus, the first value is for one RV, the second value for two RVs, and the last value for 16 RVs. The system functions as follows:

a. Fuel load at booster separation: Constant for each initial configuration of RVs.

b. Maximum booster range: in nautical miles

RM = RBASIC + RADD * SINE(AZIMUTH)

RBASIC and RADD are functions of the initial configuration of RVs and the sign of the azimuth

c. Range extension consumption: number of nautical miles traversed per unit of fuel

NM/FUEL = RX + RAXX * SINE(AZIMUTH)

RX and RAXX are functions of the initial configuration of RVs and the sign of the azimuth.

Cards 1-2 -- Fuel Load at Booster Separation

| Card Number | Name | Description |
|---|---|---|
| 1, 2 | GAS | Pounds of fuel for configurations of 1-16 RVs |

Cards 3-10 -- Maximum Booster Range (All configurations)

| | | |
|---|---|---|
| 3, 4 | RBASIC | For negative launch azimuths |
| 5, 6 | RBASIC | For positive launch azimuths |
| 7, 8 | RADD | Additional range dependent on azimuth for negative launch azimuths |
| 9, 10 | RADD | Same as Cards 7, 8 for positive launch azimuths |

Cards 11-18 -- Range Extension Consumption (All configurations)

| | | |
|---|---|---|
| 11, 12 | RX | For negative launch azimuths |
| 13, 14 | RX | For positive launch azimuths |
| 15, 16 | RAXX | Additional range extension dependent on azimuth for negative launch azimuths |
| 17, 18 | RAXX | Same as Cards 15, 16 for positive launch azimuths |

Cards 19-30 -- Downrange/Crossrange Ratio (On Board RVs)

| | | |
|---|---|---|
| 19, 20 | EONE | Exponential Constants |
| 21, 22 | ETWO | |
| 23, 24 | CONE | For negative launch azimuths |
| 25, 26 | CONE | Same as Cards 23, 24 for positive launch azimuths |
| 27, 28 | CTWO | For negative launch azimuths, azimuth dependent |

Figure 8. MTYPE=1 MIRV Data Format (Part 1 of 3)

| Card Number | Name | Description |
|---|---|---|
| 29, 30 | CTWO | Same as Cards 27, 28 for positive launch azimuths |

Cards 31-46 -- Downrange/Uprange Ratio (On Board RVs)

| | | | |
|---|---|---|---|
| 31, 32 | UE1 | Same as Cards | 19, 20 |
| 33, 34 | UE1 | | 21, 22 |
| 35, 36 | UE2 | | 23, 24 |
| 37, 38 | UE2 | | 25, 26 |
| 39, 40 | UC1 | | 27, 28 |
| 41, 42 | UC1 | | 29, 30 |
| 43, 44 | UC2 | | 31, 32 |
| 45, 46 | UC2 | | 33, 34 |

Cards 47-49 -- Denominators Used in the Toss Equations and the Downrange/Uprange and Downrange/Crossrange Ratio Equations

| | | |
|---|---|---|
| 47, 48 | TDENOM | Used in the Toss Equations for each number of RVs on board |
| 49 | UDEN | Used in the Downrange/Uprange ratio equation with the parameters on Cards 31-46 |
| 49 | DENOM | Used in the Downrange/Crossrange ratio equations with the parameters on Cards 19-30 |

Note: Toss Equation parameter cards follow in groups based on the initial booster configuration. For example, if the initial configuration has four RVs on the booster, four cards are used to describe the configuration.

| Card Number | Columns | Name | Description |
|---|---|---|---|
| 50 | 1-2 | N | The first configuration to be described where N is the initial booster load. If N=0, no configurations will follow. Assuming N=4, the following cards are: |

Figure 8. (Part 2 of 3)

| Card Number | Columns | Name | Description |
|---|---|---|---|
| 51 | 1-10 | TEONE | 1 RV on board |
| | 11-20 | TETWO | |
| | 21-30 | TOSSC1 | Negative launch azimuth, 1 RV on board |
| | 31-40 | TOSSC1 | Positive launch azimuth, 1 RV on board |
| | 41-50 | TOSSC2 | Azimuth dependent for negative launch azimuth, 1 RV on board |
| | 51-60 | TOSSC2 | Azimuth dependent for positive launch azimuth, 1 RV on board. |
| 52 | -- | -- | Same as Card 51 for 2 RVs on board |
| 53 | -- | -- | Same as Card 51 for 3 RVs on board |
| 54 | 1-2 | N | The next booster configuration to be described. N=0 or a blank card will end the data cards describing the MIRV system |

Figure 8. (Part 3 of 3)

d. Downrange/Crossrange Ratio:

$$DR/CR = G * (CONE + CTWO * SINE(AZIMUTH))$$

where

$$G = EXPF\left(EONE * \left(\frac{RM-R}{DENOM}\right)**ETWO\right)$$

CONE and CTWO are functions of the number of RVs currently on board and the sign of the azimuth.

EONE and ETWO are functions of the number of RVs currently on board.

DENOM is a constant.

e. Downrange/Uprange Ratio:

$$DR/UR = G * (UC1 + UC2 * SINE\ (AZIMUTH))$$

where

$$G = EXPF\left(UE1 * \left(\frac{RM-R}{UDEN}\right)**UE2\right)$$

UC1 and UC2 are functions of the number of RVs currently on board.

UE1 and UE2 are functions of the number of RVs currently on board.

UDEN is a constant.

f. RV toss equations: nautical miles per unit fuel

$$NM/FUEL = G * (TOSSC1 + TOSSC2 * SINE(AZIMUTH))$$

where

$$G = EXPF\left(TEONE * \left(\frac{RM-R}{TDENOM}\right)**TETWO\right)$$

where

RM=maximum booster range
R =range to initial target

TOSSC1 and TOSSC2 are functions of number of RVs originally on board, number of RVs currently on board, and sign of launch azimuth.

TEONE and TETWO are functions of number of RVs originally on board and number currently on board.

TDENOM is a function of number of RVs currently on board.

2.4.3.2 Short-Range System: MTYPE=2: This system does not consider launch azimuth. It considers configurations containing from one to 16 RVs on board. Where R is the distance from the launch base to the initial target in the footprint, the system functions as follows:

a. RV Toss Fuel Consumption Equations:

$$NM/Unit\ Fuel = ALPHA2 * R^2 + ALPHA1 * R + ALPHAZ$$

The parameters are functions of the number of RVs currently on board.

b. Fuel Load at Booster Separation:

$$TF = BETA2 * R^2 + BETA1 * R + BETAZ$$

The parameters are functions of the initial configuration of RVs.

c. Maximum Booster Range: This parameter, MAXRBOST, is a function of the initial configuration of RVs.

d. Downrange/Crossrange Ratio:

$$DR/CR = GTWO * R^2 + GONE * R + GZERO$$

These parameters are constant.

e. Downrange/Uprange Ratio:

$$DR/UR = DONE * R + DZERO$$

These parameters are constant.

Figure 9 displays the input format for this data set. All formats are F10.0. All formats are one value per field. Each field is 10 columns wide starting with column 1. The values are ordered by ascending order of RVs. The first value is for one RV, the second for two RVs, and the last for 16 RVs. There are eight values per card.

2.4.3.3 Long-Range System with Penetration Aids: MTYPE=3: This considers a long-range system with penetration aids similar to the Minuteman-III system. In the configuration for MTYPE=3, the booster will carry up to 16 reentry vehicles. In addition to the warheads, the payload contains chaff canisters for area penetration decoys.

The input data format for this type is very similar to that for the regular long-range system MTYPE=1. The only difference is in specification of the fuel load at booster separation. In place of the card

| CARDS | DESCRIPTION |
|---|---|
| 1 | ALPHAZ (1-8) |
| 2 | ALPHAZ (9-16) |
| 3,4 | ALPHA1 (1-16) |
| 5,6 | ALPHA2 (1-16) |
| 7,8 | BETAZ (1-16) |
| 9,10 | BETA1 (1-16) |
| 11,12 | BETA2 (1-16) |
| 13,14 | MAXRBOST (1-16) |

Card 15

| COLUMN | DESCRIPTION |
|---|---|
| 1-10 | GTWO |
| 11-20 | GONE |
| 21-30 | GZERO |
| 31-40 | DONE |
| 41-50 | DZERO |

Figure 9. Short-Range MIRV Data Format

specifying the fuel on board (the first data card for MTYPE=1), the following nine cards are used:

Card 1

| COLUMN | FORMAT | |
|---|---|---|
| 1-10 | F10.0 | Total fuel load before subtraction of spacing and release fuel |
| 11-20 | F10.0 | SRFDEN |

Cards 2-9 -- All formats F10.0 (Eight entries per card)

VARIABLE

SRFC1 - 1-8 RVs
SRFC1 - 9-16 RVs
SRFC2 - 1-8 RVs
SRFC2 - 9-16 RVs
SRFEXP1 - 1-8 RVs
SRFEXP1 - 9-16 RVs
SRFEXP2 - 1-8 RVs
SRFEXP2 - 9-16 RVs

The spacing and release fuel, which is subtracted from the total fuel to determine the fuel available for footprinting, is computed as follows:

Fuel = G * (SRFC1 + SRFC2 * SINE(AZIMUTH))

where:

$$G = EXPF\left(SRFEXP1 * \left(\frac{RM-R}{SRFDEN}\right) **SRFEXP2\right)$$

RM=maximum booster range
R =range to first target

2.4.3.4 Type-4 System: MTYPE=4: The Type-4 system can have one to 16 RVs as an initial launch configuration. Figure 9.1 displays the input format of the necessary data. All formats are floating point (F10.0) and like the inputs for MTYPE=1 there are eight values per card. The system functions are as follows:

a. RV Toss Fuel Consumption Equations:

$$NM/Unit\ Fuel = A2 * R^2 + A1 * R + A0$$

where:

A2, A1, and A0 are functions of the number of RVs currently on board and R is the range from the launch base to the initial target.

Cards 1-6 -- RV TOSS Fuel Consumption Rates

| Card Number | Name | Description |
|---|---|---|
| 1, 2 | A0 | Fuel consumption rate parameters for all numbers of RVs currently on board |
| 3, 4 | A1 | |
| 5, 6 | A2 | |

Cards 7-12 -- Fuel Load at Booster Separation

| | | |
|---|---|---|
| 7, 8 | B0 | Fuel load parameters for each original configuration of RVs |
| 9, 10 | B1 | |
| 11, 12 | B2 | |

Cards 13-20 -- Maximum Booster Range

| | | |
|---|---|---|
| 13, 14 | BRANGE | For each initial configuration, negative launch azimuths |
| 15, 16 | BRANGE | Same as Cards 13, 14 for positive launch azimuths |
| 17, 18 | BRADD | Additional booster range, dependent on azimuth, for negative launch azimuths |
| 19, 20 | BRADD | Same as Cards 17, 18, for positive launch azimuths |

Card 21 (Columns 1-40) -- Downrange/Crossrange Ratio

| Columns | Name | Description |
|---|---|---|
| 1-10 | CR2 | Constants |
| 11-20 | CR1 | |
| 21-30 | CR0 | |
| 31-40 | CRDEN | |

Figure 9.1 Type-4 System (MTYPE=4) Data Format (Part 1 of 2)

Card 21 (Columns 41-70) -- Downrange/Uprange Ratio

| | | |
|---|---|---|
| 41-50 | UD2 | Constants |
| 51-60 | UD1 | |
| 61-70 | UDO | |

Figure 9.1 (Part 2 of 2)

b. Fuel Load at Booster Separation:

$$TF = B2 * R^2 + B1 * R + B0$$

where:

B2, B1, and B0 are functions of the initial configuration of RVs.

c. Maximum Booster Range:

$$RM = BRANGE + BRADD * SINE(AZIMUTH)$$

where:

BRANGE and BRADD are functions of the initial configuration of RVs and the sign of the azimuth

d. Downrange/Crossrange Ratio:

$$DR/CR = C' + 1 - C'^{**(R*SINE(AZIMUTH)/CRDEN)}$$

for positive azimuths, and:

$$DR/CR = C' - 1 + C'^{**(-R*SINE(AZIMUTH)/CRDEN)}$$

for negative azimuths, where:

$$C' = CR2 * R^2 + CR1 * R + CR0$$

where:

CR2, CR1, CR0, and CRDEN are constants

e. Downrange/Uprange Ratio:

$$DR/UR = UD2 * R^2 + UD1 * R + UD0$$

where:

UD2, UD1, and UD0 are constants

2.4.3.5 Input Parameter Print: Figure 10 is a sample list of the user-input parameter cards required to input the footprint parameter tables for MIRV systems. The fields on each card are noted at the top of the figure. The explanation of each field is contained in the preceding discussion. Note that some constants in figure 10 are given in the standard FORTRAN 'E' format and are right justified. Only the 'E' format must be right justified; all other forms are free field.

| FIELD 1 | FIELD 2 | FIELD 3 | FIELD 4 | FIELD 5 | FIELD 6 | FIELD 7 | FIELD 8 |
|---|---|---|---|---|---|---|---|
| COL | COL | COL | COL | COL | COL | COL | COL |
| 1-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 |
| 2 | HYPOTHET | 9 | 14 | 15.0 | 1250. | 2 | 2 |
| 5.0 | 4.375 | 3.89 | 3.50 | 3.18 | 2.92 | 2.69 | 2.5 |
| 2.33 | 2.19 | 2.06 | 1.94 | 1.84 | 1.75 | 0.0 | 0.0 |
| -4.00E-3 | -3.50E-3 | -3.11E-3 | -2.80E-3 | -2.55E-3 | -2.33E-3 | -2.15E-3 | -2.00E-3 |
| -1.87E-3 | -1.75E-3 | -1.65E-3 | -1.56E-3 | -1.47E-3 | -1.40E-3 | 0.0 | 0.0 |
| 2.00E-6 | 1.75E-6 | 1.56E-6 | 1.40E-6 | 1.27E-6 | 1.17E-6 | 1.08E-6 | 1.00E-6 |
| 9.33E-7 | 8.75E-7 | 8.24E-7 | 7.78E-7 | 7.37E-7 | 7.00E-7 | 0.0 | 0.0 |
| 250. | 250. | 250. | 250. | 250. | 250. | 240. | 220. |
| 200. | 190. | 180. | 170. | 160. | 150. | 0. | 0. |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3500. | 3400. | 3300. | 3200. | 3100. | 3000. | 2800. | 2600. |
| 2400. | 2300. | 2200. | 2100. | 2000. | 2000. | 0. | 0. |
| .50E-6 | -1.00E-3 | 2.00 | 1.00E-3 | 1.00 | | | |

← SYSTEM TITLE CARD
IMIRV = 2
MTYPE = 2

Figure 10. User-Input Parameters for Footprint Parameter Tables

## 2.5 Output

After listing the values for the user-input parameters, the program prints the basic weapon information from the BASFILE, the gross MIRV system parameters, and the footprint parameter tables. Figures 11, 12, 13, and 14 display these prints.

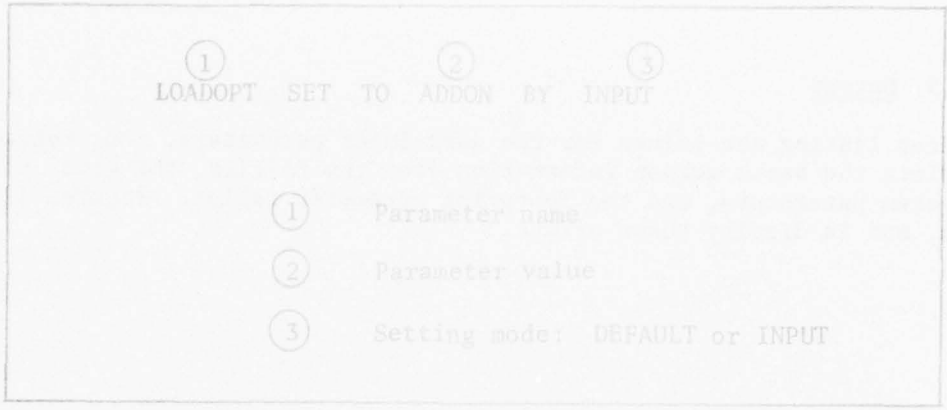



Figure 11. User-Input Parameter Settings Print

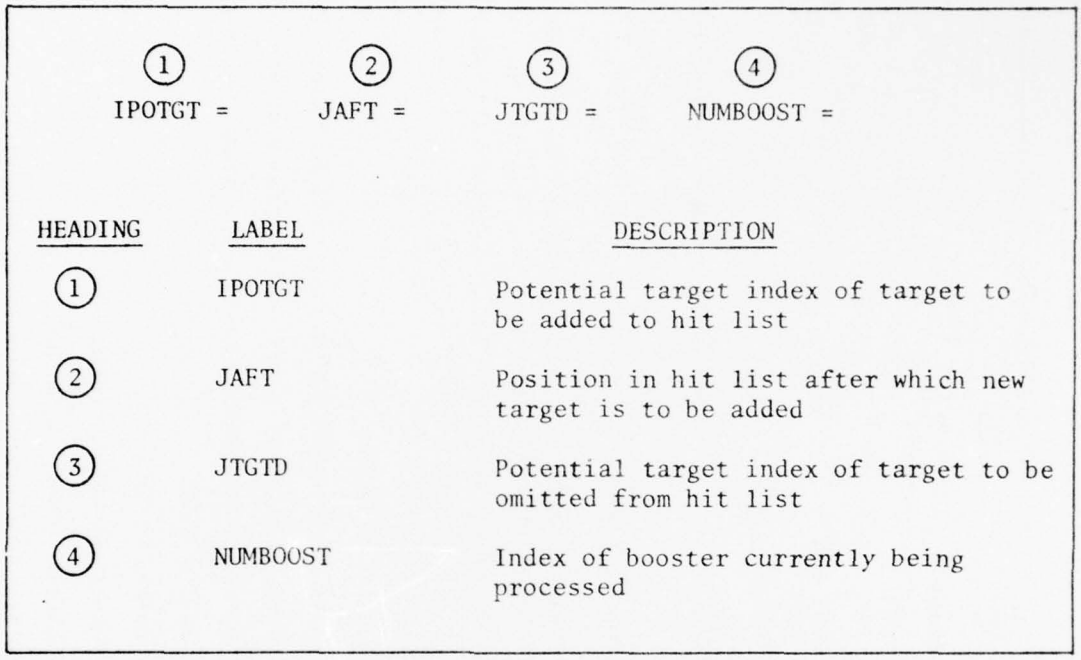
2.5.1 Standard Output. At the end of processing of each group with a MIRV capability, the program prints the performance parameters (figure 15), the distribution or reentry vehicles to boosters (figure 16), and the final weapon-target assignments (figure 17). Figure 16 displays the output of print option 76. The print shows the distribution of reentry vehicles to boosters after the addition of the RVs required to meet MINLOAD, if any were required. If the user wishes to see the distribution of RVs prior to these additions, print option 65 should be selected. If the free loading option is used then the two print options are identical.

2.5.2 Debug Prints. There are a number of prints which may be requested to monitor the processing of program FOOTPRNT. Each print is preceded by a header identifying the conditions which have activated the print. Figure 18 displays the format of the heading which precedes every print from FOOTPRNT. In the event that an error occurs, program FOOTPRNT will output an error message (explained in the next section) and then produce a series of appropriate prints which will help in finding the cause of the error. The variable IMUST in the heading signifies if the print is a normal print or the result of an error.

The prints for this program will be described by data block. A data block is a set of similar information (usually contained in one common block) which is printed together. Each print option for program FOOTPRNT consists of one or more data blocks.

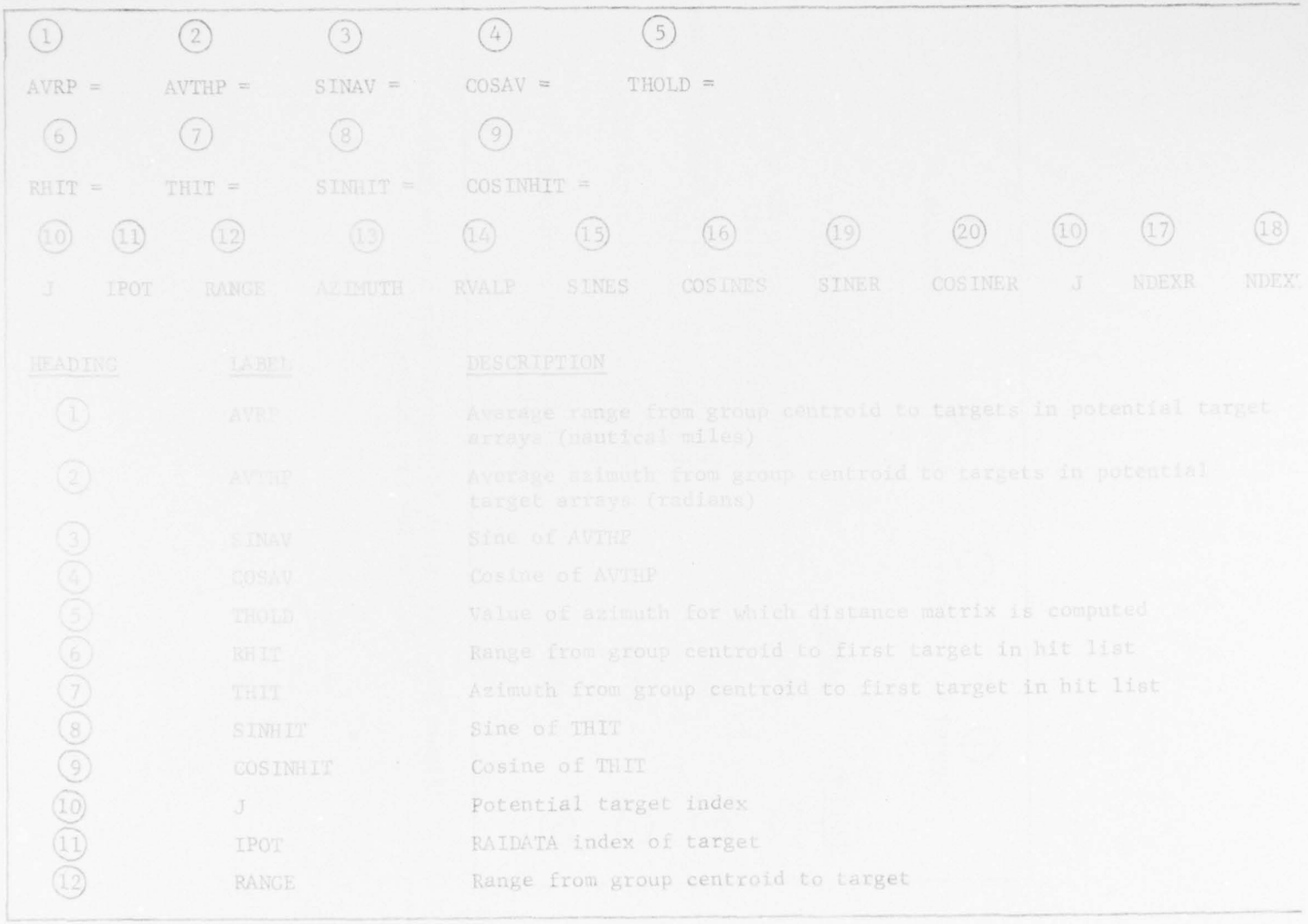
Tables 1 and 2, previously shown, display the data blocks which are printed for each request and the common blocks and information which make up each data block, respectively.

Data Block 1, named WPNGRPX, is requested by print option 1. It is described in figure 12.




| HEADING | LABEL | DESCRIPTION |
|---|---|---|
| ① | IPOTGT | Potential target index of target to be added to hit list |
| ② | JAFT | Position in hit list after which new target is to be added |
| ③ | JTGTD | Potential target index of target to be omitted from hit list |
| ④ | NUMBOOST | Index of booster currently being processed |

Figure 28. Data Block 16 (WPNTGT) Description (Target Indices for List Moving)




| HEADING | LABEL | DESCRIPTION |
|---|---|---|
| 1 | AVRP | Average range from group centroid to targets in potential target arrays (nautical miles) |
| 2 | AVTHP | Average azimuth from group centroid to targets in potential target arrays (radians) |
| 3 | SINAV | Sine of AVTHP |
| 4 | COSAV | Cosine of AVTHP |
| 5 | THOLD | Value of azimuth for which distance matrix is computed |
| 6 | RHIT | Range from group centroid to first target in hit list |
| 7 | THIT | Azimuth from group centroid to first target in hit list |
| 8 | SINHIT | Sine of THIT |
| 9 | COSINHIT | Cosine of THIT |
| 10 | J | Potential target index |
| 11 | IPOT | RAIDATA index of target |
| 12 | RANGE | Range from group centroid to target |

Figure 29. Data Block 17 (/C3/ - TEMPORARY STORAGE) Description (Part 1 of 2)

| HEADING | LABEL | DESCRIPTION |
|---|---|---|
| (13) | AZIMUTH | Azimuth from group centroid to target |
| (14) | RVALP | Relative target value (RVAL) |
| (15) | SINES | Sine of AZIMUTH |
| (16) | COSINES | Cosine of AZIMUTH |
| (17) | NDEXR | Target order by increasing range |
| (18) | NDEXT | Target order by increasing azimuth |
| (19) | SINER | Sine of RANGE (in radian measure) |
| (20) | COSINER | Cosine of RANGE (in radian measure) |

Figure 29. (Part 2 of 2)

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| HEADING | LABEL | DESCRIPTION |
|---|---|---|
| (1) | LINES | Number of timing lines |
| (2) | NO | Timing line number |
| (3) | ZLAT1 | Latitude of left endpoint of line |
| (4) | ZLONG1 | Longitude of left endpoint |
| (5) | ZLAT2 | Latitude of right endpoint |
| (6) | ZLONG2 | Longitude of right endpoint |
| (7) | LENGTH | Length of timing line (nautical miles) |
| (8) | XCROSS | X-coordinate of cross product |
| (9) | YCROSS | Y-coordinate of cross product |
| (10) | ZCROSS | Z-coordinate of cross product |
| (11) | LTYP | Plan Generator type number |
| (12) | TYPE | = 0 for FLIGHT CORMSL<br>= 1 for LINE CORMSL |
| (13) | CORMSL | CORMSL for this type in hours (if equal to -1.000E 08, it is ignored) |
| (14) | MIN FLT | Minimum flight time in hours |
| (15) | FIRST FIXED GROUP | Group number of first group with fixed assignments (1000 indicates no fixed assignments) |

Figure 89. (Part 2 of 2)

There are three printouts which give information used by PLNTPLAN's subroutine VAM. VAM applies Vogel's Approximation Method to the transportation problem of assigning available tankers to refuel areas where automatic tanker allocation is to be performed. These prints are output mainly for use by QUICK system programmers. The prints are:

a. The COST matrix, giving the contents of the FORTRAN array by the same name. Row i refers to tanker base i; column j to refuel area j. The entry in COST (i, j) is the distance between tanker base i and refuel area j. The matrix is printed up to 20 columns to a page.

b. The SOURCE/SINK table, printing for each integer I:
SOURCE(I) = N, where N is the number of tankers available for automatic allocation at tanker base I
SINK(I) = M, where M is the number of bombers which have been assigned to refuel at refuel area I.

c. The VAM solution, showing the elements of the X(i, j) matrix which constitute the final feasible solution to the transportation problems. Again, i = the tanker base number, and j = the refuel area number. The value for X(i, j) = the number of tankers to be allocated from tanker base i to refuel base j. At the end of the X(i, j) matrix, VAM prints "TOTAL COST = N," where N is the total number of tanker miles to be flown using this solution for the allocation.

Examples of the three VAM prints are shown in figure 90.

When nearing the end of execution, PLNTPLAN prints out the following self-explanatory messages:

```
 720 TANKER PLANS PROCESSED
 704 BOMBER PLANS PROCESSED
1564 MISSILE BOOSTER PLANS PROCESSED TO GO TO 3521 TARGETS.
 0   PLANS EXCEED 80 LINES
```

The tanker allocation table is also shown, giving the final assignments of tankers to refuel areas. A sample table is shown in figure 91.

After all missions have been processed, PLNTPLAN prints out the Sortie Sequence Numbers of the bombers that could not return to a recovery base (figure 91.1) and the bombers that were not fully utilized (figure 91.2); that is, bomber sorties that did not drop its entire weapon load.

The standard output ends with the messages:

```
NUMBER OF BUDDY TANKERS = N
CHECKSUM = M
***** PROCESSOR PLNTPLAN COMPLETED *****
```

where N = the number of bomber refuelings accomplished by buddy tankers and M = the sum of /DINDATA/ contents in fixed point.

| HEADING | LABEL | DESCRIPTION |
|---|---|---|
| (1) | REFUEL AREA | Number of the refuel area |
| (2) | TIME OF EARLIEST ARRIVAL | The game time at which the earliest bomber to be refueled at that area is scheduled to arrive |
| (3) | NUMBER OF TANKERS ASSIGNED | The total number of tankers which have been assigned by PLNTPLAN to the refuel area |
| (4) | NUMBER OF BOMBERS ASSIGNED | The number of bombers which have been scheduled to refuel at the refuel area |
| (5) | SURPLUS | The number of extra tankers which will be sent to the refuel area |
| (6) | LATITUDE | Latitude of the refuel area |
| (7) | LONGITUDE | Longitude of the refuel area |

Figure 91. (Part 2 of 2)

ONE WAY BOMBER MISSION SORTIE NUMBERS

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 296 | 299 | 307 | 309 | 312 | 313 | 315 | 318 | 328 | 343 | 345 | 356 | 376 |
| 377 | 379 | 394 | 405 | 409 | 429 | | | | | | | |

Figure 91.1 One Way Bomber Mission Sortie Numbers

BOMBER SORTIES NOT FULLY UTILIZED

288 298 308 314 316 317 342 355 363 383 385 406 426
434



Figure 91.2 Bomber Sorties Not Fully Utilized

PLNTPLAN also furnishes various detailed prints and debug prints as described below.

4.4.4.1 Print Option 3: Detailed Bomber and/or Tanker Plans. PLNTPLAN print option 3 describes detailed plans for bomber sorties (when GROUP is not equal to -1) and/or for tankers (when GROUP equals -1). Whenever refueling is scheduled for a bomber, an alternate plan is described for missed refueling; the primary plan is described above the broken line in the printout, and the alternate sortie is described below the line. It is possible for a bomber to refuel twice; in this case, the alternate sortie is to be flown if the second refuel is unsuccessful. If the first refuel is not completed, the bomber is to recover at the launch base.

Figure 92 shows a sample bomber sortie print. The headings are the same for tanker plan prints.

4.4.4.2 Print Option 15: Detailed Missile Plans. PLNTPLAN print option 15 gives detailed missile plans for each missile base. Figure 93 shows a sample missile plan print.

4.4.4.3 Print Option 1: OUTSRT Record (Debug Print) Print 1 shows the contents of the STRKFILE input record(s) for each bomber sortie (contents of common block /OUTSRT/). For bomber sorties which have an alternate as well as a primary plan (aircraft which refuel), two OUTSRT records will be printed; the first printed is the primary plan and the second is the alternate. Figure 94 shows a sample print option 1.

4.4.4.4 Print Option 2: Final Plan (Debug Print). There are three separate prints associated with print request 2:

a. The final bomber plans as output to the PLANTAPE, which will be printed only when the PLANTAPE is written (see figure 95).

b. The final bomber plans as output to the EVENTAPE, which will be printed only when the EVENTAPE is written (see figure 96).

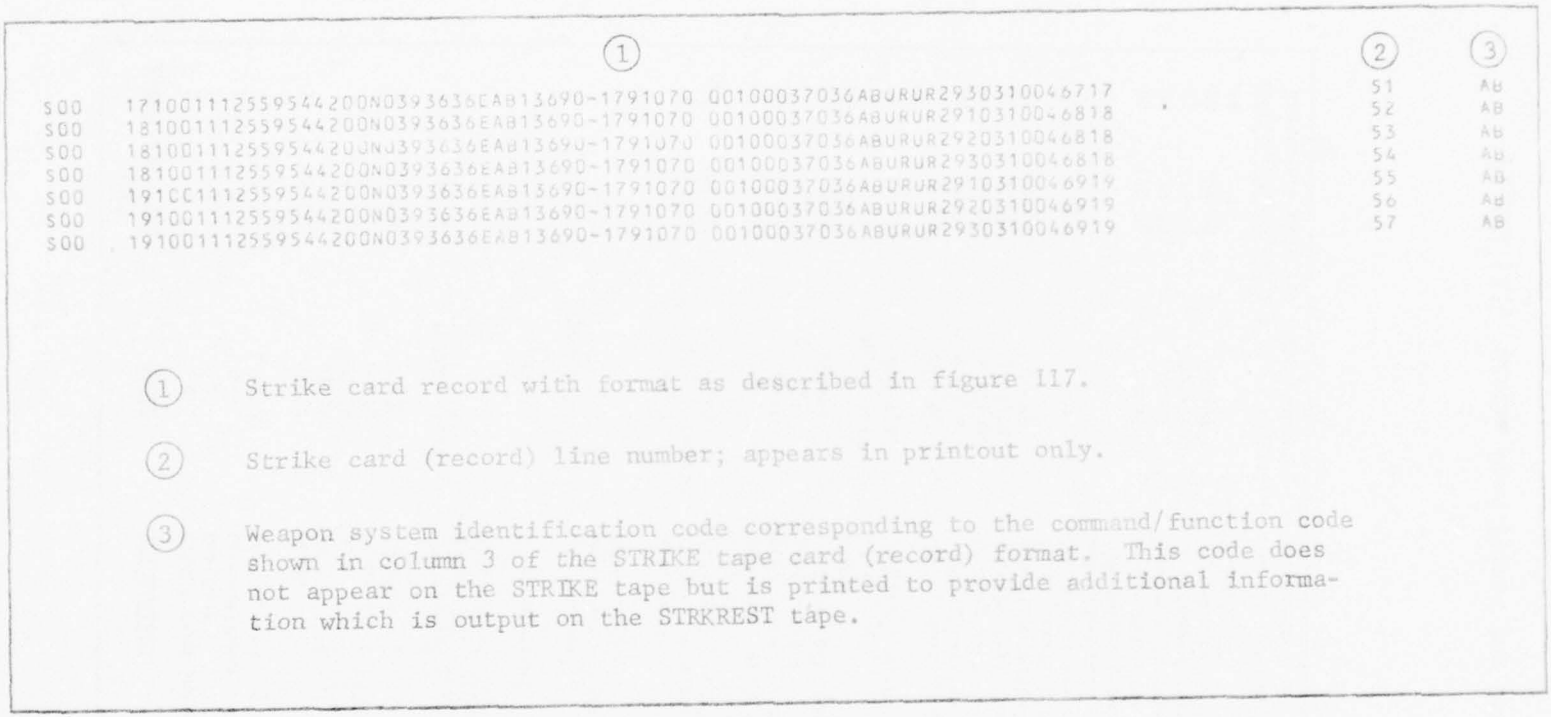
c. The final missile plans as output to the PLANTAPE, which will be printed only when the PLANTAPE is written; print 2 will be on for the missiles if it is on for the last bomber sortie processed before the missiles (see figure 97).

4.4.4.5 Print Option 4: BOUNDARY Subroutine (Debug Print). Subroutine BOUNDARY examines a given line segment to determine at what point, if any, it crosses a defense zone boundary. When it is necessary for a QUICK system programmer to see what computations have been performed, print 4, shown in figure 98, may be requested.

| FIELD | CARD COLUMNS | RANGE | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | S | STRIKE Card indicator |
| 2 | 2 | 0 | Constant |
| 3 | 3 | 1-9 | Command/function code |
| 4 | 4-8 | 1-99999 | Sortie sequence number |
| 5 | 9-10 | 01-12 | Month (Of weapon detonation) |
| | 11-12 | 01-31 | Day (Of weapon detonation) |
| | 13-14 | 00-23 | Hour (Of weapon detonation) |
| | 15-16 | 00-59 | Minutes (Of weapon detonation) |
| 6 | 17-18 | 00-59 | Seconds (Of weapon detonation) |
| 7 | 19-24 | DDMMSS where | DD=degrees, MM=minutes, SS=seconds (Latitude of desired ground zero (DGZ)) |
| | 25 | N or S | North or South |
| 8 | 26-32 | DDDMMSS where | DDD=degrees, MM=minutes, SS=seconds (Longitude of DGZ) |
| | 33 | E or W | East or West |
| 9 | 34-38 | 2 Alpha, 3 Numeric | Target designator code |
| 10 | 39-40 | -1-99 | PLS-Probability* of pre-launch survival |
| 11 | 41-42 | -1-99 | PTP-Penetration probability* |
| 12 | 43-44 | -1-99 | WSR-Weapon system reliability* |
| 13 | 45 | 1-9 | Region code |
| 14 | 46-48 | 000-999 | Fission/yield ratio |
| 15 | 49 | | Blank |
| 16 | 50-54 | 00001-99999 | Yield |
| 17 | 55-57 | 000-999 | Height of burst (hundreds of feet) |
| 18 | | | |
| 19 | 58-60 | 000-999 | CEP in 100s of feet |
| 20 | 61-62 | 2 Alpha | Task/subtask code |
| 21 | 63-64 | 2 Alpha | Country code for target location |
| 22 | 65-66 | 2 Alpha | Country code for target owner |
| 23 | 67-68 | 00-99 | Attrition probability* (i.e., percent change of attrition) |
| 24 | 69 | 0-9 | Sequential Warhead Number when operation code is 7, 10, or 11. Otherwise, blank. |
| 25 | 70-71 | 01-99 | Plane type code |
| 26 | 72-73 | 01-99 | Weapon type code |
| 27 | 74-77 | 0001-9999 | Unit number (INDEXNO of launch base) |
| 28 | 78-79 | 00-99 | Sortie number |
| 29 | 80 | | Blank |

*A printed probability of -1 implies a value of 100 (necessary since only two digits are reserved for probability representation).

Figure 117. Strike Card Format for STRIKE Tape




(1) Strike card record with format as described in figure 117.

(2) Strike card (record) line number; appears in printout only.

(3) Weapon system identification code corresponding to the command/function code shown in column 3 of the STRIKE tape card (record) format. This code does not appear on the STRIKE tape but is printed to provide additional information which is output on the STRKREST tape.

Figure 118. STRIKE Tape Print

SORTIE SPECIFICATION: "A" CARD FORMAT

| FIELD | CARD COLUMNS | RANGE | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | A | A-card indicator |
| 2 | 2-4 | 001-999 | A-card number |
| 3 | 5-8 | 0001-9999 | Unit number |
| 4 | 9-10 | 01-99 | Sortie number |
| 5 | 13-14 | 01-99 | Plane type code |
| 6 | 15 | 0 | |
| 7 | 16-17 | | Blank |
| 8 | 18 | 0 | |
| 9 | 19-22 | 0000-9999 | Reference time (launch time in hours and minutes) |
| 10 | 23 | 1 | Time reference (1=launch) |
| 11 | 24-30 | 0000000 | |
| 12 | 31 | | Blank |
| 13 | 32-34 | N/A | Plane type alpha-numeric code |
| 14 | 35 | | Blank |
| 15 | 36-37 | N/A | Country code of launch base |
| 16 | 38 | | Blank |
| 17 | 39-40 | 1-9 | SAGA Vehicle-Function code<br>1=ICBM<br>2=IRBM<br>3=MRBM<br>5=SSB/SSBN<br>6=SSGN<br>7=LRA<br>0,4,8,9 not used |
| 18 | 41-80 | | Blank |
| 19 | N/A | | Card identification number (added to print of card image not contained on tape) |

SORTIE SPECIFICATION: "B" CARD FORMAT

| FIELD | CARD COLUMNS | RANGE | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | B | B-card indicator |
| 2 | 2-4 | 001-999 | B-card number |
| 3 | 5-8 | 0001-9999 | Unit number |
| 4 | 9-10 | 01-99 | Sortie number |
| 5 | 11-12 | 01-99 | Flight leg number |
| 6 | 13-14 | 01-14 | Event or operation type indicator |
| | | 1 | Takeoff |
| | | 2 | Aerial refueling |
| | | 3-4 | Dogleg |
| | | 6 | ASM launch |

Figure 119. SORTIE SPECIFICATIONS (A and B Cards) (Part 1 of 2)

| FIELD | CARD COLUMNS | RANGE | DESCRIPTION |
|---|---|---|---|
| | | 7 | ASM on target |
| | | 8 | Decoy release |
| | | 9 | Decoy impact |
| | | 10 | Missile or bomb on target |
| | | 11 | MIRV on target |
| | | 13 | Recovery if bomber; splash if air breathing missile. |
| | | 14 | Splash (ballistic missiles) |
| 7 | 15-19 | | Location identifier for given operation<br>1=Base index<br>2=Area number<br>6="1"<br>7=Target DESIG code<br>8 or 9="1"<br>10-11=Target DESIG code<br>13=Recovery base INDEXNO if bomber |
| 8 | 20-25 | DDMMSS | Latitude at end of leg in degrees, minutes, and seconds |
| 9 | 26-33 | DDDMMSSX | Longitude at end of leg in degrees, minutes, and seconds; East or West |
| 10 | 34 | | Mode of operation |
| | | 1 | High altitude |
| | | 4 | Low altitude |
| 11 | 35 | 0 | |
| 12 | 36-41 | HHMMSS | Time of event in hours, minutes, and seconds |
| 13 | 42 | S | Southern latitude indicator (If latitude is North, column 42 is blank) |
| 14 | 43-44 | 01-90 | Sequential index within unit number |
| 15 | 45-46 | | Blank |
| 16 | 47-49 | 0-360 | Launch/Back azimuth in degrees |
| 17 | 50 | | ECM status |
| | | 0 | Off |
| | | 1 | On |
| 18 | 51 | 0 | |
| 19 | 52-53 | 00-99 | Warhead type |
| 20 | 54 | | Height of burst<br>0=ground<br>1=air |
| 21 | 55-56 | 0 | |
| 22 | 57-58 | 01-90 | Plane type code |
| 23 | 59-60 | 2 Alpha | Code for country of target location |
| 24 | 61 | 1-9 | Region code |
| 25 | 62 | | Blank |
| 26 | 63-64 | 2 Alpha | Target task code |
| 27 | 65-67 | 000-999 | Height of burst (hundreds of feet) |
| 28 | 68-72 | 00001-99999 | Yield (KT) |
| 29 | 73-75 | 000-999 | CEP (100's feet) |
| 30 | 76-77 | 2 Alpha | Code for country target owner |
| 31 | N/A | | Card number for whole SORTIE SPECIFICATIONS tape (contained only in a print of the tape) |

Figure 119. (Part 2 of 2)

```
B00304752502 11AD667531800083240 0E00112851 020 003001010003UR2 AD037U010U036UR          124
B00404752503 11AD667531600083240 0E00112851 030 003001010003UR2 AD037001000 36UR          125


A026047626  03C  0110510000000 M3I US 00                                                  126
B00104762600010047646000010100 00W00110500   0 022000000003                              127
B00204762601 11AD64040300004945 00E00113220 010 340001010003UR2 AD037001000 36UR          126
B00304762602 11AD64040300004945 00E00113220 020 340001010003UR2 AD037001000 36UR          129
B00404762603 11AD64040300004945 00E00113220 030 340001010003UR2 AD037001000 36UR          130


A027047727  030  0110510000000 M3I US 00                                                  131
B00104772700010047746000010100 00W00110500   0 022000000003                              132
B00204772701 11AD64040300004945 00E00113220 010 340001010003UR2 AD037001000 36UR          133
B00304772702 11AD64040300004945 00E00113220 020 340001010003UR2 AD037001000 36UR          134
B00404772703 11AD64040300004945 00E00113220 030 340001010003UR2 AD037001000 36UR          135
```

Figure 120. ABTAPE Print

OFFENSIVE SYSTEM TABLE

| ① PLAN GEN TYPE NO. | ② TYPE NAME | ③ PLANE TYPE | ④ PAYLOAD CONFIGURATION NOBOMB1 | ⑤ IWHD1 | ⑥ NOBOMB2 | ⑦ IWHD2 | ⑧ NASM | ⑨ IASM | ⑩ NUMBER |
|---|---|---|---|---|---|---|---|---|---|
| 2 | B-58 | 17 | 1 | 3 | 3 | 1 | 0 | 0 | 64 |
| 1 | MM-1A | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 150 |
| 0 | | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 720 |

| LABEL | HEADING | DESCRIPTION |
|---|---|---|
| ① | PLAN GEN TYPE NO. | Plan generator type number |
| ② | TYPENAME | Weapon type name |
| ③ | PLANETYPE | Plane type number |
| ④ | NOBOMB1 | Number of type 1 bombs |
| ⑤ | IWHD1 | Type 1 warhead index |
| ⑥ | NOBOMB2 | Number of type 2 bombs |
| ⑦ | IWHD2 | Type 2 warhead index |
| ⑧ | NASM | Number of ASMs |
| ⑨ | IASM | ASM index |
| ⑩ | NUMBER | Number of offensive systems |

Figure 121. The Offensive System Table

SECTION 5. PROGRAM TABLE

## 5.1 Purpose

Program TABLE is a special-purpose program which provides an interface between QUICK and two external simulators used in RISOP/SIOP gaming; i.e., the Event Sequenced Program (ESP) and the Nuclear Exchange Model (NEMO). It outputs specially formatted data required as input for the NEMO and ESP models.

## 5.2 Concept of Use

Specifically, program TABLE reads either the INDEXDB tape produced by program INDEXER or the INMODDB tape produced by program DBMOD and records, in abbreviated form, selected data concerning weapon systems and targets described herein. The extracted data are written on an output tape, TABLTAPE. This program performs no other functions and is not required to operate the QUICK system. However, because it summarizes part of the indexed data base, it enables the user to review the data base before embarking on plan generation if he so chooses.

## 5.3 File Utilization

Program TABLE reads either the INDEXDB tape from program INDEXER or the INMODDB tape from program DBMOD and records, in an abbreviated form, selected data concerning the weapon systems and targets described therein. Figure 123 displays the utilization of files by program TABLE.

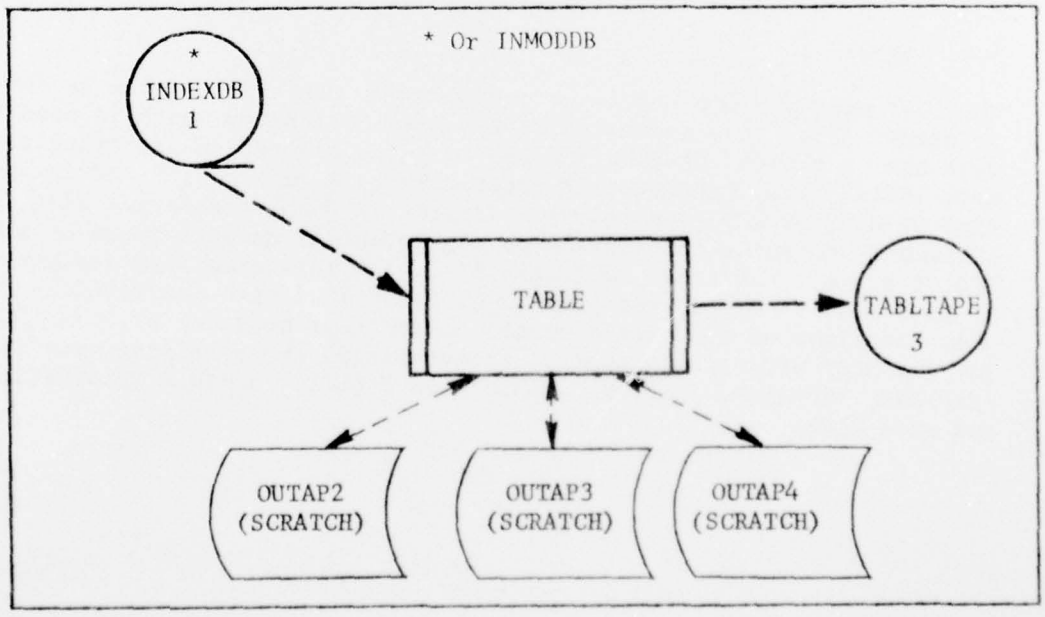



Figure 123. Program TABLE File Utilization

5.3.1 Input File. Program TABLE reads either the INDEXDB or INMODDB tape to obtain the data base information pertaining to targets, missile and bomber launch bases, delivery vehicle, and weapon characteristics.

5.3.2 Output File. Having retrieved the required information, program TABLE prepares a single output tape TABLTAPE which contains six data lists: Target List (F1TARGET), Vehicle Characteristics List (F1VEHIC), Weapon Characteristics List (F1WEAPON), Missile Base List (F1MIBASE), a Bomber Base List (F1BASE), and an Offensive Recovery Base List (F1RECBS).

5.3.3 Scratch Files. Three disk scratch files OUTAP2, OUTAP3 and OUTAP4 are used by TABLE in constructing the six data lists subsequently output to TABLTAPE.

5.3.4 Filehandler Buffer Utilization. The filehandler buffer areas utilized by program TABLE are shown in figure 124.

| FILE NAME | BUFFER NUMBER (LUN) |
|---|---|
| INDEXDB or INMODDB | 1 |
| TABLTAPE | 3 |
| OUTAP2 | 2 (scratch) |
| OUTAP3 | 4 (scratch) |
| OUTAP4 | 8 (scratch) |

Figure 124. Filehandler Buffer Utilization - Program TABLE

5.4 Input

The user must provide one input parameter to run this program as shown in figure 125. This parameter is the side designator which is used to determine the side (attribute SIDE) to be considered in preparing the data lists. This parameter is entered in card columns 1-4 and is specified as BLUE or RED (see below). If side is BLUE, the target list (F1TARGET) contains information on all potential targets owned by side RED; i.e., all RED items in ICLASS 1-15. In this case, the designation of BLUE indicates that the plan to be associated with the TABLTAPE (the plan contained on the sortie specification tape produced by INTRFACE) is for the BLUE offensive systems. Consequently, the remaining data lists (F1VEHIC, F1WEAPON, F1MIBASE, F1BASE and F1RECBS) contain information for side BLUE.

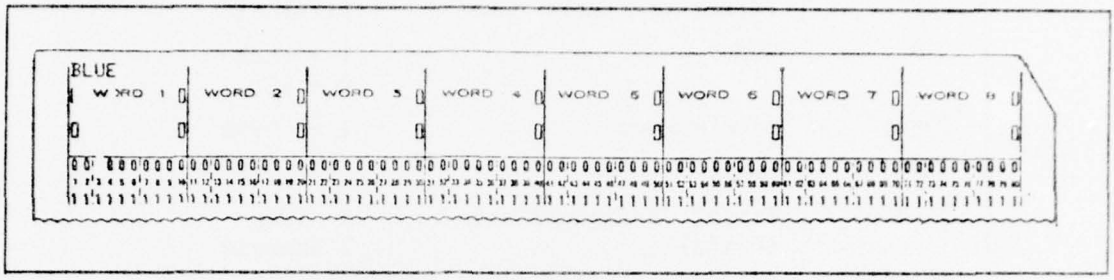



Figure 125. Side Designator Card

## 5.5 Output

Output from program TABLE is the TABLTAPE which contains the six data lists shown below. These data lists are also written on the standard output to provide a print. Headings and spacings have been added to the print of the standard output to annotate the contents of these lists. Examples of the printed output for these lists are shown in figures 126-130. The card image format and data content of these lists are described in figures indicated.

a. Target List: figure 126

b. Vehicle Characteristics List: figure 127

c. Weapon Characteristics List: figure 128

d. Missile Base List: figure 129

e. Bomber Base List: figure 130

f. Offensive Recovery Base List: figure 130.1

g. Example TABLE Printout of Target List: figure 131

h. Example TABLE Printout of Vehicle Characteristics List: figure 132

i. Example TABLE Printout of Weapon Characteristics List: figure 133

j. Example TABLE Printout of Missile Base List: figure 134

k. Example TABLE Printout of Bomber Base List: figure 135

l. Example TABLE Printout of Offensive Recovery Base List: figure 135

| COLUMNS | DESCRIPTION | REMARKS |
|---|---|---|
| 1-8 | Format and table name | F1TARGET |
| 9 | Side | 1 = BLUE<br>2 = RED |
| 10-14 | Line number | 1 to 9999 |
| 15 | Blank | |
| 16-20 | Target designator code (Desig) | 2 Alpha<br>3 Numeric |
| 21-24 | Blank | |
| 25-31 | Latitude | Degrees, Minutes, Seconds, S if South, blank if North |
| 32-39 | Longitude | Degrees, Minutes, Seconds, E if East, W if West |
| 40-45 | Target name | 6 characters only |
| 46-55 | WAC/BE | 10 Alpha |
| 56-60 | Category code | 5 numeric |
| 61-62 | Country code | 2 Alpha |
| 63-68 | Major reference number | 6 numeric |
| 69-70 | Task | 2 Alpha |
| 71 | Blank | |
| 72-76 | Index number (INDEXNO) | 1-12,000 assigned by INDEXER |
| 77 | Blank | |
| 78-80 | Complex number | Assigned by INDEXER |

Figure 126. Target List (Program TABLE)

| COLUMNS | DESCRIPTION | REMARKS |
|---|---|---|
| 1-8 | Format and table name | F1VEHIC |
| 9 | Side | 1 = BLUE<br>2 = RED |
| 10-14 | Line number | |
| 15 | "1" | Fixed constant |
| 16-18 | Blank | |
| 19-20 | Plane type | Type number = 99 |
| 21-55 | Blank | |
| 56-58 | CEP Mode 1 or CEP Ms1* | Hundreds of feet -0 to 999 |
| 59-61 | Blank | |
| 62-64 | CEP Mode 4* | Hundreds of feet -0 to 999 |
| 65-67 | Blank | |
| 68-75 | Vehicle type name | 8 characters |
| 76-80 | Blank | |

* CEP Mode 1 or CEP Ms1 = CEP Mode 4

Figure 127. Vehicle Characteristics List (Program TABLE)

| COLUMNS | DESCRIPTION | REMARKS |
|---|---|---|
| 1-8 | Format and table name | FIWEAPON |
| 9 | Side | 1 = BLUE<br>2 = RED |
| 10-14 | Line number (Weapon Number) | |
| 15 | Blank | |
| 16-19 | Weapon number | Weapon number = 99 (WHDTYPE) |
| 20 | Weapon type | 0 = Bomb<br>1 = ASM<br>2 = Decoy |
| 21-37 | Blank | |
| 38-43 | Weapon yield | Kilotons |
| 44-46 | FISFRAC | |
| 47-80 | Blank | |

Figure 128. Weapon Characteristics List (Program TABLE)

| COLUMNS | DESCRIPTION | REMARKS |
|---|---|---|
| 1-6 | Format and table name | F1BASE |
| 7-8 | Blank | |
| 9 | Side | 1 = BLUE<br>2 = RED |
| 10 | Blank | |
| 11-14 | Base number (NUMBAS) | Line number |
| 15 | Blank | |
| 16-20 | Unit identification number | QUICK index number<br>INDEXNO (1-12000) |
| 21 | Blank | |
| 22-28 | Latitude | Degrees, minutes, seconds,<br>S if south, blank if north |
| 29-36 | Longitude | Degrees, minutes, seconds,<br>E if east, W if west |
| 37 | Blank | |
| 38 | Red launch command (Bomber function) | 2 = LRA<br>3 = TAC<br>7 = None of the above |
| 39 | Blank | |
| 40 | Base functions (either home base or dispersal base) | X = yes: Blank or zero = no;<br>Note: differentiation between a "home base" and a "dispersal base" is not made |
| 41-43 | Blank | |
| 44 | Tanker | 1 Alpha character |
| 45-59 | Blank | |
| 60-67 | Target name | 8 Alpha characters |
| 68-69 | Blank | |
| 70-71 | Country Location | 2 Alpha characters |

Figure 130. Bomber Base List (Program TABLE)

| COLUMNS | DESCRIPTION | REMARKS |
|---|---|---|
| 1-8 | Format and table name | F1RECBS |
| 9 | Side | 1 = BLUE<br>2 = RED |
| 10-14 | Line number | 1 to 99999 |
| 15 | Blank | |
| 16-20 | Target designator code | 2 Alpha<br>3 numeric |
| 21-24 | Blank | |
| 25-31 | Latitude | Degrees, Minutes, Seconds,<br>S if South, blank if North |
| 32-39 | Longitude | Degrees, Minutes, Seconds,<br>E if East, W if West |
| 40-45 | Target name | 6 Alpha |
| 46-55 | WAC/BE | 10 Alpha |
| 56-60 | Category code | 5 numeric |
| 61-62 | Country code | 2 Alpha |
| 63-68 | Major reference number | 6 numeric |
| 69-70 | Task | 2 Alpha |
| 71-75 | Index number (INDEXNO) | 1-12,000 assigned by INDEXER |
| 76 | Blank | |
| 77-80 | Capacity | 1-9999 assigned by INDEXER |

Figure 130.1 Offensive Recovery Base List (Program TABLE)

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TARGET LIST

| SIDE | NO. | TGT DESIG | LAT | LONG | TGT NAME | WAC/BE | CAT CODE | CTRY MAJOR | TASK | INDEX NO. | COMPLEX NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F1TARGET2 | 1 | AB 27 | 300000 | 1100000 | WRECOV | 000000 | | MX | AB | 2435 | 0 |
| F1TARGET2 | 2 | AB 28 | 230000 | 0820000 | WRECOV | 000000 | | CU | AB | 2436 | 0 |
| F1TARGET2 | 3 | AB 29 | 240000 | 0820000 | WRECOV | 000000 | | CU | AB | 2437 | 0 |
| F1TARGET2 | 4 | AB 30 | 240000 | 0840000 | WRECOV | 000000 | | CU | AB | 2438 | 0 |
| F1TARGET2 | 5 | AB 31 | 460000 | 1350000 | ERECOV | 000000 | | UR | AB | 2439 | 0 |
| F1TARGET2 | 6 | AB 32 | 440000 | 1350000 | ERECOV | 000000 | | UR | AB | 2440 | 0 |

Figure 131. Example TABLE Printout of Target List

OFFENSIVE RECOVERY BASE LIST

| SIDE | NO. | TGT DESIG | LAT | LONG | NAME | WAC/BE | CAT CODE | CTRY | MAJOR | TASK | INDEX NO. | CPCTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1RECBS 2 | 1 | AB 1 | 430000 | 1380000 | ERECOV | | | JA | | AB | 1904 | 60 |
| F1RECBS 2 | 2 | AB 2 | 433000 | 1380000 | ERECOV | | | JA | | AB | 1905 | 60 |
| F1RECBS 2 | 3 | AB 3 | 430000 | 1373000 | ERECOV | | | JA | | AB | 1906 | 60 |
| F1RECBS 2 | 4 | AB 4 | 433000 | 1371500 | ERECOV | | | JA | | AB | 1907 | 60 |
| F1RECBS 2 | 5 | AB 5 | 380000 | 1330000 | ERECOV | | | SK | | AB | 1908 | 60 |
| F1RECBS 2 | 6 | AB 6 | 390000 | 1330000 | ERECOV | | | SK | | AB | 1909 | 60 |
| F1RECBS 2 | 7 | AB 7 | 380000 | 1321500 | ERECOV | | | SK | | AB | 1910 | 60 |
| F1RECBS 2 | 8 | AB 8 | 383000 | 1320600 | ERECOV | | | SK | | AB | 1911 | 60 |
| F1RECBS 2 | 9 | AB 9 | 420000 | 0290000 | ERECOV | | | TK | | AB | 1912 | 60 |
| F1RECBS 2 | 10 | AB 10 | 410000 | 0285400 | ERECOV | | | TK | | AB | 1913 | 60 |
| F1RECBS 2 | 11 | AB 11 | 420000 | 0280900 | ERECOV | | | TK | | AB | 1914 | 60 |
| F1RECBS 2 | 12 | AB 12 | 423000 | 0290000 | ERECOV | | | TK | | AB | 1915 | 60 |
| F1RECBS 2 | 13 | AB 13 | 420000 | 0400000 | ERECOV | | | TK | | AB | 1916 | 60 |
| F1RECBS 2 | 14 | AB 14 | 370000 | 0550000 | ERECOV | | | IR | | AB | 1917 | 60 |
| F1RECBS 2 | 15 | AB 15 | 380000 | 0550000 | ERECOV | | | IR | | AB | 1918 | 60 |
| F1RECBS 2 | 16 | AB 16 | 370000 | 0720000 | ERECOV | | | PK | | AB | 1919 | 60 |
| F1RECBS 2 | 17 | AB 17 | 373000 | 0710000 | ERECOV | | | PK | | AB | 1920 | 60 |
| F1RECBS 2 | 18 | AB 18 | 370000 | 0711500 | ERECOV | | | PK | | AB | 1921 | 60 |
| F1RECBS 2 | 19 | AB 19 | 580000 | 0070000 | ERECOV | | | UK | | AB | 1922 | 60 |
| F1RECBS 2 | 20 | AB 20 | 581200 | 0060000 | ERECOV | | | UK | | AB | 1923 | 60 |
| F1RECBS 2 | 21 | AB 21 | 550000 | 0070000 | ERECOV | | | UK | | AB | 1924 | 60 |
| F1RECBS 2 | 22 | AB 22 | 480000 | 0120000 | ERECOV | | | NG | | AB | 1925 | 60 |
| F1RECBS 2 | 23 | AB 23 | 600000 | 1750000 | WRECOV | | | US | | AB | 1926 | 60 |
| F1RECBS 2 | 24 | AB 24 | 610000 | 1750000 | WRECOV | | | US | | AB | 1927 | 60 |
| F1RECBS 2 | 25 | AB 25 | 600000 | 1754800 | WRECOV | | | US | | AB | 1928 | 60 |
| F1RECBS 2 | 26 | AB 26 | 700000 | 0220000 | WRECOV | | | GL | | AB | 1929 | 60 |

Figure 135.1 Example TABLE Printout of Offensive Recovery Bases

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